Background information

“Rainforestation Farming”

Model project
for sustainable rural development and biodiversity rehabilitation in South East Asia

presented during the

Workshop „Sustainable Development, natural Fibres for modern Technology, Subsistence and Biodiversity Improvement Projects in the Philippines“

March 11 to 17, 2002

EURONATUR

European Nature Heritage Fund

partners:

UNIVERSITÄT HOHENHEIM 1818

LEYTE STATE UNIVERSITY

THE BELLAGIO FORUM FOR SUSTAINABLE DEVELOPMENT

The Workshop is staged with the kind support of:

DaimlerChrysler and Deutsche Lufthansa Airlines

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Problem

The Philippine archipelago consists of about 7107 islands , 860 of them are permanently inhabited.
About 67 Mio people do live mainly on the bigger islands like Luzon, Mindanao, Samar, Leyte , Negros and Cebu. About 28% of the population is living below the officially declared poverty line of 1 US$ per day. The life expectancy is on average 66 years and the population growth rate is about 2.3% per year.
About 45 % of the population lives in rural areas and 40 % of the workforce is working in the field of agriculture.
Mainly during the last 40 years the original amount of 17 million ha of forested area was reduced by disastrous logging and land use practices to 5.5 million ha. Thus only less than 6% of the originally 60% of the total forested land area have remained as prime habitats for wildlife and genetic conservation.
The hardwood tropical trees were mainly exported as logs. By this means a country originally rich in tropical hardwood trees was turned into a timber poor country. Therefore the government was forced to enforce a total logging ban since 1990.
Due to the steadily growing population pressure and the political instability particularly during the dictatorship of the former president Marcos and his family vast areas of the mid-mountain regions were transformed into settlements by slash-and-burn practices. This lead to biological and agronomical “deserts” particularly in erosion prone slopes of the mid-mountains.
Further, old stands of coconuts in plantations, about 2 Mio ha, contribute to an increasing economical and ecological process of poverty in rural areas. Depression of the yield of these 50-60 years old stands of coconuts and drastically dropping prices for copra lead to an acceleration of the poverty process.
Replanting with very high investments are urgently needed but due to the low revenue expectations they do not make any sense.
Therefore, older coconut stands are cut and used as timber leading to even more serious ecological consequences as already faced by the logging of the rainforest. All the manifold ecological functions of a forested area like even and regular water supply for the environment, improvement of the soil fertility, provision of a habitat for animals and plants, prevention of outbreaks of plant- and animal epidemics are threatened by soil erosion, sedimentation of near-coast marine coral reefs and floods, particularly during rainy season. Also the near-coast fish- and other marine animals stock is endangered.
The migration of the rural poor to the slums of the cities is one consequence another one is the even heavier exploitation of the remaining ecosystem.

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Challenge

Contribution to alleviate the poverty in rural areas of the Philippines by developing and implementing technologies for sustainable development and improvement of the socio-economic livelihood of the rural poor, prevention of further environmental degradation and rehabilitation of biodiversity.

Project Goals

The primary project goal was to establish appropriate tropical ecology in teaching, research and extension at the former Visayas State College of Agriculture , now Leyte State University, on Leyte.
This would guarantee a contribution to the sustainable improvement of the social and economical living conditions of the rural poor of the region by means of improving the environmental conditions.
This efforts lead to the development of three major results in this model project supported by EURONATURE, University of Hohenheim and Leyte State University:

- The so-called “Rainforestation Farming Technology” by which only indigenous local tree species are used , including shade-loving, slow –growing primary forest species of tropical hardwood trees, sun-demanding, fast-growing pioneer trees and fruit trees.
- Provision of a sustainable income for the rural poor
- Protection and rehabilitation of the environment and biodiversity

- Environmental view

  The island character of the Philippines, particularly on Leyte , is stressed by the fact that the mountainous central cordilliera drops sharply down from about 1200 m a.s.l. to the Camotes Sea, leaving sometimes not more than 200-1000 m between the coastline and the foothills. The vulnerability of this area of frequent seismic events along the Philippine fault line to any disturbance is high. Also the livelihood of the rural population, often being farmers during daytime and fisherman during night-time, is heavily dependent on the given environment. The very fertile alluvial coastal lowlands along the Camotes Sea are dependent in all their ecological and economical functions on the watershed areas of their hinterland. Any major disturbance in the upper and middle watershed area influences therefore directly the livelihood of the rural population whether as farmers or as fishermen. This holds true for the past and the presence and is visible in form of huge coconut plantations and sugar cane plantations. The establishment of these monocultures without any considerations towards environmental or ecological necessities or consequences was one of the major reasons for a flood event in 1991 in the area of Ormoc City which killed more than 8000 people in a single night.
  The most obvious destructive and dangerous element in the environment of today is the removal of primary forests and secondary forest particularly in the upper parts of the mountains.
  Without a profound change in attitude towards the use of forests disasters can occur again at any time and the transformation of the fertile parts of the environment into critical land of no further agricultural value is unavoidable. Therefore a reforestation program was urgently needed implemented in a way that the rural poor are beneficiaries and the rich local biodiversity threatened to be extinguished due to the loss of the indigenous forested areas.

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- Biodiversity aspects

  The area of Leyte and particularly the Mt. Pangasugan is still one of the biodiversity highlights in the Visayas. Due to the fact that this area was either extremely difficult to reach for commercial logging or part of the College controlled area there are still found here the Philippine eagle-owl (Bubo philippinensis) hornbills (Buceros hydrocorax semigaleatus) flying lemurs (Cynocephalus volans), Golden-capped Fruit Bat (Acerodon jubatus) and even the smallest and only true carnivorous ape of the world , the Tarsius syrichta (Tarsiers).
  This 120 g nocturnal ape is only known from the Philippines , Kalimantan and Sumatra and is a highly endangered species on the International red list of endangered organisms. Also all the other mentioned animals are endangered with the exception of the hornbills, placed on the red list as vulnerable.
  The list of fish, amphibia , reptiles and insects still unknown is certainly long. Whenever collecting expeditions were performed new species were found whether animals or plants. For example,in 1993 two new species of fish belonging to the family of Gobiidae were described from the rivers running down from Mt. Pangasugan. In 1995 the holotypes of 11 newly described species of beetles were placed in the National History Museum. In 1996 three new orchid species were found on trees in the remaining primary forest parts of Mt. Pangasugan . It is well known but not recognized that a tree in a rainforest is not only a standing piece of timber but a living base for many creatures.
  Major results of these investigations about the biodiversity were published as field guides for a wider public and are available in bookstores (e.g. Guide to the ecosystems of Palawan Echinoderms of the Philippines, Native Philippine orchids)

- Social economical aspects

  Usually people have no concept of exhaustion and replacement of natural resources. They do not realize that trees, unless replaced by man or nature, are non-renewable resources. The general notion is that man can always go to the forest and forever cut trees without the need to replenish and maintain it. Therefore high priority must be given to parallel the development of the innovative reforestation technology with educational measures on all levels. More than 30 community organizers implementing the developed technologies in the villages were engaged, thousands of people used the offers of on – hand trainings developed for interested farmers, educators and administrators, 25 Master - and Bachelor students were upgraded in related fields and support was given to 10 PhD students presently all working as academic staff in cooperation with the newly founded Institute of Tropical Ecology of the Leyte State University.
  Further it became clear that the rural poor living nearby a forested area will only involve themselves in conservation efforts if they do have any benefit whether an economical , political one or in status.
  Besides the 17 ha model farm with its 4 ha of near-to-nature closed canopy demonstration forest in the boundaries of the Leyte State University, on 27 other sites throughout the island of Leyte, but also on Palawan, Bohol and in Mindanao long-term trials were run by local subsistence farmers or farmer cooperatives. More than 1500 ha were included in farming activities using the “rainforestation farming” technology.

The revenue from the tree-farming system will give the farmers from the 5-7 year onward a good , continuous and steady income from the selling of timber only. During the first years the income for the farmer is mainly from growing crops as before under and between the growing tree seedlings.
Gradually he is turning from sun demanding crops more and more into shade demanding crops like Ginger, Cardamon, Coffee and Abaca. In addition, the selling of tree-seedlings for other private and governmental reforestation projects or for the ornamental market became a new source of income for the local farmers.
Due to the fact that he is active in line with the officially policy of planting more trees and protecting the indigenous environment the government could be convinced in a growing number of cases that illegal squatters could be made permanent residents and tenants of the given farming area with permanent land ownership certificates.
Some cooperatives became so active protectors in their respective watershed area that they even brought illegal loggers to court and received policing rights for the respective watershed by the Government authorities.

- Sustainability aspects

The “rainforestation farming” technology was chosen and developed under the assumption that a farming-system in the humid tropics becomes increasingly more sustainable the nearer it is in its species composition and physical structure to the local rainforest ecosystem.
It could be proved during the 9 year pilot phase that by using local pioneer- and hardwood tree species, including the highly valued Dipterocarpaceae, for a community-based farming system and complementing it with livelihood-programs during the initial first years of the tree-farming practices the income of the local farmers can be increased considerably and the long term expectations of the activities are realistic and therefore sustainable.
In addition the local biodiversity is protected and even rehabilitated and therefore the ecological and economical benefits of this promising and sustainable land use management system is very high.

- Transferability aspects

This innovative technology could trigger more widespread initiatives and bring solutions to serious degradation problems in former rainforest areas .It could be transferred with respective adaptations to other local environments and situations for many areas throughout South East Asia.
One cooperative on Leyte meanwhile has set up its own training program in “rainforestation farming” technology and is training in this farmer-to-farmer training scheme about 300 villagers per year.
Due to the very widespread interest in this specific approach for reforestation in rural areas of the humid tropics numerous talks were given on all levels and publications were produced or are still in the process to distribute the results (e.g. “Rainforestation Farming” booklet in three languages used in the Philippines or the book “Rainforestation Farming”).
It is safe to say that this approach of using only local indigenous tree species for reforestation schemes, including local fruit tree species, could easily be adopted throughout the humid tropics.

Chances and Perspectives

The “Rainforestation Farming “ technology allows the reforestation of degraded areas and old coconut stands with a highly diverse and economically future-oriented, sustainable tree farm. It produces an income opportunity out of an area that is no longer economically productive, while at the same time producing timber of high quality for a demanding market. It is providing protection of the land and rehabilitation and conservation of the local biodiversity. Biodiversity conservation and protection is achieved in the following ways:

- First, actively through propagation and planting of endangered tree species in a near to nature planting scheme
- Second, passively through the creation of a suitable habitat and microclimate to which species migrate from adjacent forest or secondary growth areas
- Third, through involvement of the local communities in active protection of the remaining forests because these forest with its mother trees are the resource for the seeds needed in the nurseries

If a system of balanced fading out of the presently existing unsuitable land use management via an ecologically safe land use system is used both can be achieved: The preservation of nature with her fundamental ecosystem functions and the stabilization of a good subsistence farm income.

Of crucial importance is the adjustment of the technology to the local situation. The farmers must have the choice to select elements of the “rainforestation farming” system and combine it with agricultural system familiar to them. One of these systems is the production of natural fibres coming from the pseudo-stems of textile bananas or Abaca (Musa textiles) grown in the shade of trees. By this means an even greater input to alleviate the rural poverty could be reached by producing highly valued quality fibres for possible use in relevant industries. This would contribute to relief the economical pressure from the subsistence farmers giving them another chance to make their decent living in the rural areas and not opting for a life in the urban centres for the poor, called slums.

By spreading this method to other areas of the humid tropics many areas of devastated former forest land can be rehabilitated as ecologically and economically valuable country-sides. This technology is therefore a substantial contribution to stop the ongoing destruction of the remaining primary forests by desperate rural farmers.

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March 2002